DOCUMENT RESUME

ED 217 680 EC 142 768

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TITLE The Effect of Class Placement on the Social Adjustment of Mentally Retarded Children.
PUB DATE Mar 82
NOTE 51p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, March 19-23, 1982).

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Elementary Secondary Education; Literature Reviews; Mainstreaming; *Mental Retardation; Resource Room Programs; *Social Adjustment; Special Classes; *Student Placement

ABSTRACT

Findings of 43 studies examining the effects of class placement on social adjustment of mentally retarded students were reviewed. Studies met the following criteria: (1) they investigated the class placement of mentally retarded students; (2) they included a dependent measure of social adjustment; and (3) they reported quantitative tests of placement effects. A comparison of special versus regular class placement revealed significantly better social adjustment in special classes, while comparison of special versus resource classroom placement revealed no difference in overall social adjustment. Ratings by teachers and peers indicated better adjustment for students in special classes while ratings by adults other than teachers tended to indicate superior social adjustment in regular or resource classes. Self reports of social adjustment revealed no placement differences. Policy implications included the importance of considering different perspectives on the issue of social adjustment. (Author/CL)

The Effect of Class Placement on the

Social Adjustment of Mentally Retarded Children

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This paper was prepared while the second author received support from National Science Foundation Grant #BNS 78-08834 (Social and Developmental Psychology). Correspondence may be sent to Ken Ottenbacher, Center for Research in Social Behavior, 111 East Stewart Road, Columbia, MO 65211.

Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, March 19-23, 1982).

Running Head: Class Placement and Social Adjustment

Abstract

The results of studies examining the effects of class placement on the social adjustment of mentally retarded students were reviewed. Forty-three studies were located which compared special placement with resource or regular class placement. All 43 studies met the following criteria: a) they investigated the class placement of mentally retarded students (mean IQ = 69.7); b) they included a dependent measure of social adjustment; and, c) they reported quantitative tests of placement effects. A comparison of special versus regular class placement revealed significantly better social adjustment in special classes. A comparison of special versus resource classroom placement revealed no difference in overall social adjustment. In addition, social adjustment measures provided by teachers or school peers indicated better adjustment for mentally retarded students in special classes while measures provided by adults other than the teacher tended to indicate superior social adjustment in regular or resource classes. Self-reports of social adjustment revealed no placement differences. Several other study characteristics were also found to be related to the outcome of class placement comparisons. Results were discussed from both a theoretical and policy viewpoint.

The Effect of Class Placement of the Social Adjustment of Mentally Retarded Children

The social adjustment of mentally retarded children has been a concern since the beginnings of special education (Esten, 1900). Pioneers of special education were optimistic that mentally retarded (MR) children could be effectively educated in the regular classroom. Unfortunately, early attempts at "mainstreaming" ended in failure (Wallin, 1924). For instance, Johnson (1950) found MR students were generally rejected and socially isolated by their regular class peers. Johnson and Kirk (1950) repeated the study in a more "progressive" school system. The results were similar despite the teacher's special efforts to integrate MR students into the regular class. These studies supported the belief that MR children could be better educated in small, homogeneous groups with specially trained teachers.

During the 1950's and 1960's a number of studies formally compared special and regular class placement. These investigations, referred to as efficacy studies, revealed contravening results. Several studies found superior academic achievement for MR students in regular classes (Mullen & Itkin, 1961; Cassidy & Stanton, 1959) while other studies found no differences (Blatt, 1958; Goldstein, Moss & Jordan, 1965; Thurstone, 1959). With regard to personal adjustment, Blatt (1958) reported no differences, while Cassidy and Stanton (1959) reported differences on teacher social adjustment ratings favoring special class placement, and Thurstone (1959) found that MR students in regular class were more isolated than MR

students in special class. Finally, Goldstein et al. (1965) found that special class MR children were better adjusted than regular class MR children, but were less inclined to interact with neighborhood peers.

During this same period a number of broader societal factors caused special educators to question the appropriateness of special class placement (Dunn, 1968; Johnson, 1962). Societal factors included (a) the evolving civil rights movement and (b) new developments in educational theory and technology. A debate developed in the field of special education. One side supported special class placement, particularly to facilitate social adjustment (Kolstoe, 1972; Smith & Arkans, 1974) and the other side called for abandonment of the special class system (Christopolos & Renz, 1969; Lily, 1970). Bruininks and Rynders (1971) have cognizantly summarized the arguments presented by various authors for and against special placement.

PL 94-142

While the research community debated over the empirical evidence, mounting professonal and parental concern culminated in the passage of PL 94-142. PL 94-142 mandates that, to the maximum extent possible, handicapped children should be educated with children who are not handicapped. The mandates of PL 94-142, however, have not empirically resolved the question of effective placement for the MR child, particularly the mildly retarded. MacMillan (1977) has pointed out that many of the court cases leading up to passage of PL 94-142 were settled by consent agreement. This means that decisions were based more on social judgments and values rather than empirical data.

Hopefully, future legal and legislative decisions will be decided on the basis of more formal evidence. In light of the mandates of PL 94-142, Abidin and Seltzer (1980) emphasized the importance to special education of documenting program outcomes. As Semmel, Gottlieb, and Robinson (1979) note, "schools are faced with the central problem of determining the least restrictive and most effective educational alternatives for handicapped children. This determination, however, is an empirical issue that cannot be resolved through legal or legislative decree" (p. 224).

Previous Reviews

A number of reviews of efficacy studies are available. Reviews by Goldstein (1967) and Guskin and Spicker (1968) concentrate on describing the methodological inadequacies of studies making placement comparisons. For example, Guskin and Spicker (1968) discussed problems related to matching MR students in special and regular class. They noted the difficulties caused by matching at the time the study is undertaken rather than randomly assigning students to groups. In general, both the Goldstein (1967) and Guskin and Spicker (1968) reviews conclude that special class MR children display better social adjustment than regular class MR children. They regarded this conclusion as tentative, however, because of methodological problems.

MacMillan (1971) described a number of conceptual problems in class placement comparisons. The most notable is the number of features that make up class placement. For instance, in many efficacy studies (a) children in special classes were labeled "MR" while children in regular classes were not; (b) the special class had a

teacher with special training; (c) the curricula were drastically different; (d) the pupil-teacher ratio differed between classes; and (e) the peer groups were dissimilar. MacMillan (1971) concluded that when differences were found between classes it was difficult to tell which factor or combination of factors produced the effect.

The review by Corman and Gottlieb (1979) appeared after the passage of PL 94-142 so the concept of "mainstreaming" was emphasized in this review. It covered studies of academic achievement, social adjustment, and attitudes of professional school personnel. The social adjustment studies were divided into those dealing with (a) other's perceptions of retarded children, (b) EMR pupil's self-reports, and (c) observations of MR children's behavior. Corman and Gottlieb (1979) conclude that across all measures "studies that compared the social status of integrated and segregated EMR pupils have revealed that integrated placement is not accompanied by social acceptance of retarded children" (p. 271). They add that the generalizability of the finding remains to be tested.

In general, these reviews suggested that MR children's social adjustment does not profit from regular class placement. However, Meyers, MacMillan and Yoshida (1980) contended that efficacy studies contain so many methodological inadequacies that it is difficult to draw any systematic conclusions from them. The major criticisms of the past research cited by Meyers et al. (1980) are that previous investigators (a) used inappropriate or biased samples; (b) employed unreliable instruments and procedures to evaluate academic or social adjustment; and (c) lacked specificity concerning the nature of the independent variable.

The Present Review

The purpose of the present investigation was to use recently developed reviewing procedures to synthesize the existing evidence on MR students' social adjustment in various classrooms. Techniques that sensitively integrate quantitative research evidence have recently been developed and refined. These procedures treat the literature review process as a unique type of research which requires the same rigorous methodology that is required of primary researchers (Cooper, Note 1). The methods allow the reviewer to quantitatively aggregate a large number of research studies and to make more consensual judgments based on the results (cf. Cooper, 1979; Rosenthal, 1978). The new procedures also allow systematic investigation of the effects of variation in study methodologies on study results (Glass, 1978; Pillemer & Light, 1980) including the differences in research design alluded to in earlier reviews. Several other recent reviews have applied these techniques to bodies of research in special education (Carlberg & Kavale, 1980; Kavale, 1981). Hopefully, their application to the question of placement effects on social adjustment of MR students will produce some insights which have eluded past reviews.

Methods

Study Retrieval Procedures

Potentially relevant studies were obtained through manual searches of Psychological Abstracts, Current Index to Journals in Education and Resources in Education (ERIC), and Dissertation Abstracts. The descriptors used included "mental retardation", "peer

acceptance", "mainstreamed", "mildly handicapped", "self concept", "socialization", "mentally handicapped", and "educable mentally retarded". An on-line computer search of The Exceptional Child Education Resources and ERIC data bases was also conducted. The computer search, provided by the Council for Exceptional Children, was entitled "Achievement, Adjustment, and Peer Acceptance of Mainstreamed Mildly Handicapped Students". In addition to the manual and computer searches, an examination of the bibliographies of retrieved studies resulted in location of additional research.

Criteria for Determining the Relevance of Studies

The search procedures yielded a total of 103 non-overlapping research report titles that were broadly construed as potentially relevant to the topic. The abstracts and full reports of these studies were then judged for relevance on several specific criteria. The first criterion was related to the nature of the independent variable. There were three basic types of class placement. Special class placement was defined by the students spending the majority of academic classroom time in a special class with a special teacher. Resource class placement included those situations where the students spent at least half their school day in the regular classroom, but also spent part of the day receiving special instruction designed to provide help in specific academic areas. In regular class placement the students spent the entire day in the regular classroom. In some regular class placements there was minimal outside support provided to the students or teacher in the regular class.

The second criterion involved the dependent variable. Social adjustment was broadly operationalized as any measure, formal or

informal, that evaluated the student's adjustment to his or her classroom situation. Four broad categories of measurement were defined according to who evaluated social adjustment. The most common type of social adjustment measure involved self-assessment. These measures included scales such as the Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1969) and the California Test of Personality (Thorpe, Clark & Tieggs, 1953). The next most frequent category was teacher ratings of social adjustment. These included informal teacher rating scales (i.e., ratings of popularity) and more formal evaluations such as the Vineland Social Maturity Scale (Doll, 1964). The third most frequent category was provided by peer ratings, generally based on informal measures. For example, a sociometric questionnaire might ask students to list the classmates they would most like for friends or playmates (cf. Johnson, 1950). A sociometric rank would then be assigned to each child based on the number of times his/her name was chosen by peers. The least frequent category was evaluations by an adult other than the teacher. Other adults were typically classroom observers trained by the researcher or MR students' parents. An other adult measure of social adjustment might involve classroom observers employing a time sampling technique to record behavior (Gottlieb, Gampel, Budoff, 1975).

The final two criteria for inclusion in the review were related to study design and analysis: (a) a study had to report a comparison of two or more class placements, and (b) the study had to report findings and results in a quantitative manner.

In summary, a study was included in the review if it met the following criteria:

a) the study investigated educational placement of mentally retarded students;

b) the study included a dependent measure of social adjustment that could be categorized according to whether it was completed by self, peer, teacher or other adult;

c) the study included a comparison between at least two placements; and

d) the study reported findings and results in a fashion that could be used in quantitative analysis.

After reviewing available abstracts and titles, 44 of the 103 studies were eliminated because they did not meet the above criteria. Another 14 studies were eliminated for similar reasons after the full report was scrutinized. Finally, two studies that may have been relevant could not be retrieved. The remaining 43 studies met the criteria outlined above and were included in the review. Bibliographic data on studies included in the review appear in a separate reference section at the end of the paper.

Characteristics of Individual Studies

With the general boundaries of the review determined, the next step was to identify aspects of the studies that might be related to study outcomes. These variables fell into four general categories. The first category was subject characteristics, including information on the number of subjects used in the study and their mean IQ and age. The second category included design characteristics such as (a) how subjects were selected, (b) whether the classroom

situation was created by the experimenters or existed previous to the experiment, (c) the type of assignment used (i.e., random or matched), (d) the time between the study's initiation and the measurement of social adjustment, (e) the type of placement comparison made (i.e., special vs. regular, special vs. resource, or regular vs. resource), and (f) the type of dependent variable used to measure social adjustment. Also, a number of studies included more than one independent variable in the analysis. When this occurred the number of factors other than class placement were recorded. The third design category included aspects of the study's outcome such as (a) the statistical test used, (b) the test value reported, (c) the accompanying probability level, (d) the z-score corresponding to the probability level, and (e) the degrees of freedom associated with error. The final category, retrieval characteristics, included (a) year of publication, (b) source of publication, and (c) how the study was located.

Examples of Design Variations

In light of the criticisms of previous reviewers, the type of assignment used in studies deserves careful attention. Forty-one of the 43 studies employed a between-students design. Since only two of the studies used students as their own control, it was not possible to compare between and within student designs.

The three methods used to assign students to classes were random assignment, matching procedures, or simply employing classes as they existed. Three studies will be described to provide examples of the different types of assignment procedures and also illustrate the variety of measures used to assess social adjustment.

First, a study by Thurstone (1959) compared existing special and regular class placements. Forty MR students (with IQ of 50 to 75) were located in 30 different regular classes from grades three to eight. These classrooms generally contained only one or two MR students. As a comparison group, over 300 MR students were located in 30 special classes containing from 5 to 20 children. The MR children in the regular classes were chosen less often as friends by their peers and were rated by teachers as significantly less well adjusted than MR students in special class placement.

Blatt (1958), on the other hand, matched 125 MR children by age, IQ, and gender. The MR students in regular class resided in a county that did not provide special class services. Blatt found that teacher ratings using the New York City Scales of Social Maturity and Emotional Stability favored the special class students. However, responses on the California Test of Personality revealed no significant differences between the two types of placement.

Finally, Gottlieb, Gampel and Budoff (1975) conducted a study in which they randomly assigned 22 MR students to either regular or special class placement. Observations were recorded for each pupil by means of a time sampling method. Twelve categories of social behavior were recorded by observers. The observations were made prior to class placement, two months after placement, and at the end of the academic year. The results at the end of the school year indicated that the regular class MR students displayed significantly more pro-social behavior than the MR students in special class.

Identification of Comparison

Three studies made three-way comparisons between special versus resource versus regular placement. For purposes of quantitative analysis, the data from these studies were treated as three separate two-group comparisons. Also, there were nine studies that contained social adjustment measures by more than one evaluator. These were treated as separate comparisons. If a study contained more than one measure by the same evaluator, then only the most standardized measure was used.

In summary, 43 studies were coded for analysis. For purposes of this review, these studies contained a total of 50 two-group comparisons of class placement.

Quantifying Outcomes

Two primary methods for examining quantitative outcomes across studies were employed. The first method of aggregation involved combining probabilities by adding their associated z-scores (cf. Cooper, 1979). This procedure, referred to as the Stouffer Method (Mosteller & Bush, 1954), is straightforward and easy to compute when probability levels are reported. Z-scores associated with the probability values are computed for each hypothesis test and the z-scores are summed and divided by the square root of the number of tests. The result is itself a z-score which can be interpreted as gauging the probablility that the set of study results could have been generated by chance. In the present application, when a study reported a non-significant result and no p-level was given, a p-level of .50 and accompanying z-score of 0.00 was assumed. This was the case for 22

of the 59 comparisons. There were three cases in which no probability level was reported but the article contained enough information to compute a chi square. The corresponding probability was then used in the analysis.

The method of combining probabilities has several inadequacies. First, studies with significant p-levels are more likely to be published than are studies with nonsignificant p-levels (Greenwald, 1975). This leads to what Rosenthal (1979) called "the file drawer problem". As a means for gauging the potential impact of relevant but unretrieved null studies, Rosenthal (1979) and Cooper (1979) present equivalent procedures for estimating the number of null-summing studies needed to increase a combined probability above a chosen level of significance. In this review, a fail-safe N (N_{fs}) was computed using procedures described by Cooper (1979). The fail-safe N indicates the number of additional studies with a summed null finding that would be needed to increase the cumulative probability above the $p<.05$ level. Cooper states that "The fail-safe N is an important descriptive statistic in that it allows a reader to easily evaluate the 'strength' exhibited in a review against the felt completeness of the review's sampling procedure. However, a limitation of the fail-safe N should be pointed out. It is an appropriate guide for the reader only if the assumption of a summed null relation in undiscovered studies is acceptable. It is always possible that a smaller number of studies exist that have a summed z-score of equal but negative value to the sum of those reviewed. The plausibility of this alternative also should be considered by the reader" (p. 135).

A second shortcoming of the combining probabilities technique is that it does not tap the wealth of information contained in the variation in results from one study to another. This fact led to the second method of quantitative synthesis. Procedures capable of uncovering systematic variation in study results have been pioneered by Glass (1976, 1980). Glass' procedures involve the calculation of study effect sizes (Cohen, 1977) and the relating of these to study characteristics.

Effects Size Estimation

A total of 59 effect sizes could be computed from the 59 hypothesis tests. The effect size used was the d-index (Cohen, 1977). The d-index gauges the difference between two group means in terms of their common (average) standard deviation. If d = .3, it means that 3/10 of a standard deviation separates the average persons in the two groups. The d-indexes were calculated by the following formula:

$$d = \frac{\bar{X} \text{ special placement} - \bar{X} \text{ regular/resource placement}}{\text{SD special class placement}}$$

This computation resulted in a positive effect size (ES), if the study favored the special class and a negative effect size if the study favored the regular or resource class. Cohen (1977) regards d-indexes of .20 as small, .50 as medium and .80 as large.

The d-index transforms the result from any two-group comparison into a common standardized metric. Findings from a number of studies can then be combined and analyzed simultaneously. Effect sizes were most often computed through transformation of t and F ratios (cf. Friedman, 1968). Some of the t and F values were estimated by

the significance level and the sample size when no group means were reported and only the value of multiple degree of freedom statistics was given. If non-parametric statistics or percentages were used, effect sizes were calculated using procedures described by Glass (1978, 1980). Also, Hedges (1980) has noted that d-indexes computed for small samples may be biased, so Hedges' correction factors were employed to adjust for potentially inflated effect sizes. Finally, if a study reported a nonsignificant result and not enough information was provided to determine the effect size, a d-index of 0.00 was assumed. This occurred in 24 cases.

Cohen (1977) presents several measures of distribution overlap meant to enhance the interpretability of effect size indexes. The overlap measure employed in this review, called U_3, tells the percentage of the population with the smaller mean that is exceeded by the average person in the population with the larger mean. For instance, if d = .3 then U_3 = 61.8, meaning the average person in the higher-meaned group exceeded 61.8% of the people in the lower-meaned group. A table for converting the d-index to U_3 is presented by Cohen (1977, p. 22).

Results

Description of the Literature

Three thousand six-hundred and twenty-eight students participated in the 59 hypothesis tests. The average age of the students was 11.4 (SD = 2.5) while the average IQ for all students was 69.7 (SD = 5). The mean year of report appearance was 1970 (SD = 6.8). The mean number of MR subjects from special classes per study was

48.2 (SD = 31.2). The mean number of MR students from regular classes was 45.1 (SD = 33.7) and the mean number of MR students per study from resource classes was 34.2 (SD = 15.5). Table 1 provides descriptive information for those hypothesis tests which compared special versus regular and special versus resource class separately.

Insert Table 1 About Here

Thirty-two of the hypothesis tests appeared in professional journals while 27 were found in sources such as ERIC or Dissertation Abstracts International. Thirty-four tests resulted in significant ($p < .05$) findings, and of these 19 appeared in journals. A chi square revealed no significant relationship between outcomes of a hypothesis test (significant vs. nonsignificant) and whether it appeared in a journal or other source ($x^2_{(1)} = .10$, $p > .10$).

Design Characteristics and Outcome

Between and within student designs. Only two studies utilized a within-students design. Both studies also used a self-concept measure of social adjustment. Schurr, Towne, and Joiner (1972) evaluated self-concept in existing class placement for 22 MR students. They reported that the self-concept of MR students in special classes steadily improved with time. However, students who were returned to regular class during the year reverted to a lower self-concept. Strang, Smith and Rogers (1978) compared the self-concept of MR students in special classes before and after being randomly assigned to half-day integration into regular class. Better self-concept scores for the integrated students were found at the end of the school year.

Type of assignment. Random assignment was used in 19 of the hypothesis tests while 16 tested students in their respective classrooms without any attempt at manipulation, and 13 tests occurred with groups that had been matched on selected variables. The variables most frequently used for matching were IQ, age, sex and race. The type of assignment could not be determined for 11 of the hypothesis tests. The percent of studies finding significant results for each type of assignment were as follows: 58% for random assignment; 81% for pre-existing placement; 39% for matched samplings; and, 55% for unknown procedures. A chi square (with Yates correction) involving outcome (significant vs. nonsignificant) and type of assignment (random vs. matched vs. pre-existing) was not significant ($\chi^2_{(2)} = 3.91$, ns). Separate chi squares for each pair-wise comparison revealed a $\chi^2_{(1)}$ of 1.18 (ns) for random versus matched, a $\chi^2_{(1)}$ of 1.21 (ns) for random versus pre-existing and a $\chi^2_{(1)}$ of 3.70 ($p<.07$) for matched versus pre-existing.

Class Placement

Resource versus regular placement. Only 5 of the 59 hypothesis tests investigated regular versus resource class placement. Three of these reported no difference (Flynn, 1974; Flynn & Flynn, 1970; Smith & Kennedy, 1967). The other two reported significant differences in favor of the regular class. Kendall (1977) evaluated the self-concept of 90 randomly selected students from special, regular and resource class placement. Results indicated that the MR students in regular class had superior self-concepts compared to either the resource or special class students. Lewis (1974) also

investigated the self-concept of MR students in the three placement options. Random selection was not employed. MR students in regular class were found to have better self-concepts than MR students in resource class placement. Because of the small number of hypothesis tests, the regular versus resource comparison was not included in subsequent analyses.

Insert Tables 2 and 3 About Here

Special versus regular placement. Table 2 lists the 42 comparisons of MR students in special versus regular classes. Eighteen of the tests found significantly better social adjustment in special classes, while 15 found no difference, and 9 found superior social adjustment in regular classes. An overall probability was generated using procedures referred to in the methods section (Mosteller & Bush, 1954). Z-scores favoring regular class placement were assigned negative values. The overall Zma was +2.39 ($p<.02$) which supports the conclusions of previous narrative reviews that social adjustment is better in special classes (Goldstein, 1967; Guskin & Spicker, 1968; MacMillan, 1971). The number of null summing studies needed to raise this p-level above .05 is 47.

Special versus resource placement. Table 3 lists the twelve hypothesis tests that explored special versus resource placement. Two tests reported significant results in favor of special class, three reported significant results in favor of the resource class, and seven found no significant difference. Z-scores favoring the resource class were assigned negative values. The Zma for social adjustment was -.66 (ns). Although nonsignificant, the fact that

the Zma for special versus resource placement was negative suggests that the social adjustment of MR students in resource classes may have been slightly better (the magnitude of the effect is described below).

Class Placement and Social Adjustment Evaluator

A breakdown of the placement comparison results according to who evaluated adjustment revealed some interesting findings. The first analysis combined comparisons of special versus both regular and resource placement in order to maximize cell sizes. The self measure Zma was -.46 (ns, N = 27), the teacher measure Zma was +3.24 ($p < .001$, N = 13), the peer measure Zma was +3.20 ($p < .001$, N = 8), and other adult measure Zma was -2.10 ($p < .04$, N = 6).

The breakdown reveals that the separate evaluators of social adjustment may have had conflicting opinions about which placement was best. The teacher and peer measures favor special class placement while the other adult measures favor the regular or resource class placement. Though nonsignificant, MR students appeared to agree with other adults.

It should be noted that the number of probabilities used to calculate the Zma for the other adult and peer measures was small and this makes the findings for these measures less certain. Specifically, for the teacher measure, the fail-safe N was 37, for peers N_{fs} equalled 22 and for other adults N_{fs} equalled 4.

The Zma for self measures in comparisons of special versus regular class placement only was -.03 (ns, N = 19), for teacher measures Zma = +2.93 ($p < .004$, N = 11, N_{fs} = 24), for peer measures Zma = +4.16

($p<.001$, $N_{fs} = 7$, $N_{fe} = 38$); and for other adult measures Zma = -2.30 ($p<.02$, $N_{fs} = 3$, $N_{fe} = 5$). This result is similar to the overall finding. The pattern was not exactly replicated in the special versus resource placement comparison, however. The Zma for self measures in the special versus resource comparison was .81 (ns, N = 8), for teacher measures the Zma was +1.39 (ns, N = 2), for peer measures the Zma was -1.96 ($p<.05$, N = 1), and for the other adult measures the Zma = 0.0 (ns, N = 1). Of the eight total peer measurements only one did not favor the special placement and it compared special versus resource classes.

In summary, for both special versus regular and special versus resource class comparisons, teachers reported better social adjustment for the MR students in special classes, though the special versus regular comparison was more definite. Peers reported better MR classmate adjustment in special class when it was compared to regular class, but the single study comparing special and resource classes favored resource classes. When other adults compared special and regular classes they found regular class to be superior. The single other adult special versus resource comparison found no difference. The MR students themselves reported better adjustment in either regular or resource classes, but both results were far from significant.

Effect Size Analysis

The mean d-index for all measures of social adjustment combined across all comparisons was +.03 (SD = .51, N = 54). This means that the average social adjustment evaluation of special class MR students was better than 51.2 percent of the MR students in regular or

resource classes. The average effect, however, masks some larger opposing effects, as the initial combined probability analyses indicated.

Table 4 provides a breakdown of the mean d-indexes for each type of placement comparison. These estimates all indicate relations in

Insert Table 4 About Here

the direction described above. All the effects would be labeled small except for the peer and other adult measures comparing special versus regular placement. These d-indexes would be labeled medium but in opposite directions. Cohen's labels, however, should be applied with extreme caution and may not be valuable as indicators of practical significance within topic areas (see Cooper, in press).

Studies Involving Multiple Social Adjustment Evaluations

A total of 19 tests occurred in studies that employed more than one measure of social adjustment. These studies provide added experimental control for examining the uncovered evaluator differences.

Seven studies containing multiple measures compared special versus regular placement. Blatt (1958) employed teacher and self measures on 125 matched MR students. He found teacher measures favored special class placement (d = 1.05) while no difference was found between the two placements on self measures. Thurstone (1959) used peer and teacher measures with MR students in pre-existing special and regular classes. She found effects in favor of the special classes for both measures (peer d = .61; teacher d = .35). Bacher (1965) used peer, teacher, and self measures and found the social adjustment of special class MR students superior when teachers

(d = .53) and peers (d = .53) did the evaluating but no difference when self measures were used. These three studies reported results identical to the overall conclusions of this review. Three studies partially supported the general finding. Budoff and Gottlieb (1976) collected teacher and self measures on 31 randomly assigned MR students. They found no difference for teacher measures, but demonstrated superior social adjustment for the regular class when self measures were used (d = -1.37). Coy (1977) used teacher measures and parental perceptions of social adjustment and found both to favor regular class (teacher d = -1.28; other adult d = -.86). Schell (1959) used teacher and self measures, but found no difference on either measure. Finally, one multiple evaluator study produced results that were contrary to the general trend. Goldstein, Moss and Jordan (1965) employed measures of parental and self-perceptions and found significant effects in favor of the special classes in both cases (self d = .52; other adult d = .71).

Two studies with multiple evaluators compared special with resource placement. Kehle and Guidabald (1978) used teacher and self measures with randomly assigned students. They found teacher measures favored the special class (d = .34), but found no difference for the self measure. Tilley (1971) employed teacher and peer measures and found no difference on either measure. Of the two studies, one fully supported the general finding and one reported partial support.

In sum, this separate analysis of tests in studies with multiple measures of social adjustment revealed a pattern of evaluator differences substantially similar to the overall results. This finding

increases confidence that evaluator effects were not due to other design characteristics associated with a particular researcher's choice of who would judge adjustment.

Other Design Characteristics and Outcomes

As ancillary analysis, correlations were computed between a number of study characteristics and the direction of the study outcome. Comparisons finding special class superior were coded -1, null comparisons were coded 0, and comparisons favoring either regular or resource class were coded +1.

The correlation between direction of outcome with the average IQ of students in the study was nonsignificant ($r_{(24)} = .17$, ns), as was that with chronological age of students ($r_{(26)} = -.13$, ns), and with the number of independent variables other than class placement used in the study ($r_{(11)} = .29$, ns).

The correlation between the direction of outcome and year of appearance of the study report was significant ($r_{(53)} = .45$, $p<.01$). Tests finding significantly better social adjustment for students in regular or resource class placement had a mean appearance year of 1973.6 (SD 4.9) while the mean appearance year of tests finding no difference was 1971.5 (SD 6.5) and tests finding significantly better adjustment in special class placement averaged an appearance year of 1965.6 (SD 6.8). Further analysis revealed that tests reporting better social adjustment in special classes appeared earlier than those reporting no difference ($t_{(40} = 2.94$, $p<.01$) or superior adjustment in regular or resource class ($t_{(30)} = 3.94$, $p<.001$). There was no significant difference in year of report appearance

between tests reporting better social adjustment for regular/resource classes and those finding no difference ($t_{(32)} = 1.08$, $p > .10$).

A possible confound of relations would exist if studies done relatively early more often used peer and teacher evaluations, since it was shown that studies using these evaluators reported findings more favorable to special class placement. However, the mean appearance year for studies using peer and/or teacher measures was 1968.6 (SD 7.7), while the mean appearance year for studies using self and other measures was 1970.5 (SD = 6.6). This difference was not statistically significant ($t_{(52)} = .94$, ns). Thus, the relations between outcome, year of appearance, and evaluator do not appear to be confounded.

The correlation between the direction of outcome and the delay between the initiation of the study and when the measure of social adjustment was taken approached significance ($r_{(18)} = .41$, $p < .10$). The average delay between study initiation and the measurement of social adjustment was 17 months (SD = 13.9). For those comparisons in which social adjustment was judged superior in special class the mean length of delay was 25.1 months (SD = 18) while comparisons finding regular or resource classes superior had a mean delay of 9 months (SD = 7.6). It must be remembered, however, that this finding is based on a small number of studies reporting elapsed time (N = 19).

This finding could again be related to the evaluator of social adjustment. The mean delay between initiation of the study and the measurement of social adjustment for the comparisons using peer and

teacher measures was 15.7 months (SD = 13) and for self and other adult measures was 18.2 months (SD = 15.4). This difference did not approach significance ($t_{(17)} = .39$, ns).

Finally, because it was early found that type of assignment was related to the significance/nonsignificance of a study, a chi square was computed between type of assignment (random vs. matched vs. pre-existing) and type of social adjustment measure (peer vs. teacher vs. self vs. other adult). This analysis revealed that these two variables were not confounded ($X^2 = 2.25$, $p>.10$, $df = 6$).

Discussion and Conclusion

The results of this review indicate that special placement of MR students is beneficial to social adjustment when special placement is compared to regular placement. This conclusion is in agreement with the narrative reviews of Corman and Gottlieb (1979), Goldstein (1967), Guskin and Spicker (1968), and MacMillan (1971). However, no significant difference in social adjustment was found when special class was compared to resource class. The direction of these results favored the resource class.

The Role of Adjustment Evaluator

The present review also provided some insights not reported in the earlier reviews. Most importantly, the results of placement comparisons appeared to be related to who made the evaluation of social adjustment. Previous researchers in this area have noted the possibility of such a relationshp but it was never formally explored (Gottlieb, Semmel, & Veldman, 1978). In general, those tests using social adjustment ratings made by an adult other than the teacher

appeared more likely to find better social adjustment for MR students in regular or resource class while those tests using teacher evaluations or regular class peer ratings tended to find superior social adjustment in special classes.

An explanation for the teacher and peer finding is suggested by several related studies. First, regular classroom teachers and children (a) hold predominantly negative attitudes toward retarded children (Copeland & Weissbord, 1976; Warren, Turner & Brody, 1964), and (b) generally do not favor integration of MR students into the regular classroom (Siperstein & Gottlieb, 1978). For example, Shotel, Iano and McGettigan (1972) examined the attitudes of regular classroom teachers who did and did not have experience teaching MR students. They found that over 90% of teachers with experience teaching MR students were not in favor of integrating them into the regular class. Siperstein and Bak (1980) note that "Since regular classroom teachers' attitudes toward mentally retarded persons are generally negative, their expectancies for retarded children are usually poor" (p. 210, also see Salvia, Clark & Ysseldyke, 1973).

It seems reasonable to assume, then, that (a) the negative attitudes of teachers and peers might be transmitted to the MR student and affect their social adjustment and/or (b) that these negative attitudes might bias the judgments of teachers and peers when evaluating MR students. While the negative bias of regular class teachers and peers may contribute to the rated superiority of special class, it also seems reasonable to assume that special class teachers would tend to have positive attitudes toward MR students (Efron & Efron, 1967) and that special class peers would have more

favorable attitudes toward other MR students. These could also enhance either the actual or perceived adjustment of MR students in special classes.

Social adjustment measures by adults other than the teacher tended to favor regular/resource class placement. Most of the other adult measures were either filled out by parents or classroom observers. Attitudes and expectancies for these evaluators are not as clearly identifiable as for teachers and peers. It is interesting, therefore, to note that of the six tests using other adult raters, three occurred in studies conducted in the 1960's when special class placement was looked upon favorably. Two of the three tests found no difference, and one favored special class. On the other hand, all three of the other adult tests conducted in the 1970's, when public support for special class placement was eroding, found in favor of regular/resource class placement.

Responses on self measures of social adjustment appeared to be the least affected by class placement. The self responses of MR students did not clearly favor either type of class placement although there was a slight trend toward better self-assessments in regular/resource classes. The self responses represented the most complex type of measurement and were undoubtedly influenced by multiple factors other than class placement.

Other Design Variables

Hypothesis tests with earlier appearance dates were more likely to report results that favored special class placement. This finding was unrelated to the evaluator of social adjustment. Sixty-five

percent of the tests finding the social adjustment of special class MR students to be superior appeared before 1968. As noted above, this date marks the end of the period when special class placement was the philosophically and practically preferred method for educating MR children (MacMillan, 1977). In distinction, 83% of the tests in which regular or resource class placement was associated with superior social adjustment appeared between 1968 and 1979. During this period the professional special education community, along with parent groups and the courts, were seriously questioning the use of special class placement for mild MR students. Much of the debate and subsequent change in professional attitude was initiated by Dunn's (1968) classic article which questioned the appropriateness of segregated education and offered alternative placement strategies, many of which were later implemented. The temporal pattern of results concerning social adjustment, then, appears to correlate with the change in philosophical attitude. Regrettably, it is impossible to determine (a) if Dunn foresaw changes that were about to occur or (b) if Dunn's remarks somehow influenced how subsequent research in special education was conducted.

The amount of time students spent in class placement from the initiation of the study to the measure of social adjustment also tended to relate to the outcome of the hypothesis test, though this relation did not reach statistical significance. If the measure of social adjustment was taken within the same school year as the initiation of the study, then MR students in regular or resource classes were judged more socially adjusted than their counterparts in special classes. If, on the other hand, the final measure of social

adjustment was delayed at least into the second year of placement, then special class was more likely to be judged superior. MR students in special class are likely to remain together with the same teacher for an extended period of time and may experience less change in curriculum, classmates, etc., from one school year to the next. This fact may partially account for the finding described above. The longer MR students remain in a particular setting, the more likely they are to accommodate and adapt and therefore be judged positively in terms of social adjustment. In contrast, MR students in regular or resource classes are more prone to experience changes from one school year to the next and these changes may result in less favorable judgments of social adjustment over periods spanning more than one school year.

Policy Implications

In a recent interview Kirk (cited by Thomas, 1981) stated that, "I think...peer acceptance and social adjustment of the child...is the major problem facing us in our present mainstreaming programs." (p. 123). This review has demonstrated that the problem of social adjustment referred to by Kirk is a complex one. Questions concerning which class placement will facilitate the social adjustment of MR students cannot be answered without considering who is evaluating social adjustment and when the evaluation occurs. If the concern of policy-makers is with teacher or peer perceptions of placement then special class appears to be the preferred option. If, on the other hand, the perception of social adjustment is dependent upon the evaluation of observers and parents, then the regular/resource class

placement appears best. Finally, if the concern is with the MR students' own perception of self-adjustment, then placement appears to make little difference.

The effect of placement on social adjustment can be further illuminated through the examination of effect sizes. For example, if administrators are primarily concerned with teacher perceptions of social adjustment, then the teacher effect size, though small, may have more practical implications for planning than the larger peer or other adult effect sizes.

Effect sizes also have implications for the cost/benefit analysis of special versus resource versus regular class placement. For instance, administrators must determine what impact, or size of effect, will be considered practically important in terms of making placement decisions. The answer to the question of degree of effect will again depend upon whose perception of social adjustment is most valued by decision makers. If the teacher or peer perspective is administratively preferred, then the social adjustment of MR students in special class is clearly superior and the cost associated with special class placement may be seen as legitimate. However, if the other adult or self measures are the favored perspective, then the higher costs of special class placement may not seem justified in terms of enhanced social adjustment.

There is obviously no simple solution to the issue of social adjustment and class placement for MR students. However, the results of this review have demonstrated the importance of considering different perspectives and have provided a first step toward gauging the impact (effect) of different strategies. Without such a

determination, questions related to complex socio-educational issues will continue to defy practical resolution.

Reference Note

1. Cooper, H. M. The literature review: Elevating its status to scientific inquiry. Unpublished manuscript, University of Missouri-Columbia, 1980.

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Table 1

Descriptive Information for Types of Class Placement Comparisons*

	Special vs. Regular	Special vs. Resource
Number of hypothesis tests	42	12
Number of subjects per hypothesis test		
$\bar{X}$	48.11	29.54
SD	32.63	10.88
Average IQ of special class students[1]		
$\bar{X}$	68.12	74.76
SD	3.35	9.53
Average IQ of regular class MR students		
$\bar{X}$	69.75	---
SD	3.50	---
Average IQ of resource class MR students		
$\bar{X}$	---	73.12
SD	---	9.58
Average age of special class students[2]		
$\bar{X}$	11.73	9.60
SD	2.55	.82
Average age of MR students in regular class		
$\bar{X}$	11.74	---
SD	2.58	---
Average age of MR students in resource class		
$\bar{X}$	---	9.80
SD	---	1.10

(Continued on next page)

Table 1 (continued)

*Only five hypothesis tests investigated regular versus resource class placement so summary statistics for this comparison are not included.

[1]IQ measures are based on a population mean of 69.71 (SD = 5.01).

[2]Age measures are based on a population mean of 11.29 years (SD = 2.45).

Table 2

Comparison of Special Versus Regular Class Placement

Author(s)	Year	Outcome	p-level[+]	Effect Size	Measure
Bacher, J. H.	1965	special=regular	.500**	0.00*	self
Blatt, B.	1958	special=regular	.587	0.00	self
Budoff, M., et al.	1976	regular>special	.005	1.37	self
Calhoun, G. A.	1978	special=regular	.500**	0.00*	self
Calhoun, G. A., et al.	1977	regular>special	.025	.92	self
Carvajal, A. L.	1972	special=regular	.500**	0.00*	self
Cassidy, V. M., et al.	1959	special>regular	.050	.27	self
Goldstein, H., et al.	1965	special>regular	.025	.52	self
Holland, J. W.	1971	special=regular	.500**	0.00*	self
Jordan, T. E., et al.	1959	special>regular	.025	.43	self
Kendall, W. S.	1977	regular>special	.025	.71	self
Kern, W. H., et al.	1962	special>regular	.025	.61	self
Lewis, M. E.	1974	special=regular	.500**	0.00*	self
Meyerowitz, J. H.	1962	regular>special	.002	.45	self
Myers, J. K.,	1976	special>regular	.025	.35	self
Rouse, B. G.	1974	special=regular	.500**	0.00*	self
Schell, J. S.	1959	special=regular	.500**	0.00*	self
Schurr, K. T., et al.	1972	special>regular	.025	.33	self
Zito, R. J., et al.	1969	regular>special	.025	.30	self
Bacher, J. H.	1965	special>regular	.025	.53*	teacher
Blatt, B.	1958	special>regular	.005	1.05	teacher
Budoff, M., et al.	1976	special=regular	.500**	0.00*	teacher
Coy, M. N.	1977	regular>special	.002	1.28	teacher

(Continued on next page)

Table 2 (continued)

Author(s)	Year	Outcome	p-level	Effect Size	Measure
Elenbogen, M. L. A.	1957	special>regular	.025	.53*	teacher
Hoeltke, G. M.	1967	special>regular	.025	.58	teacher
Macy, D. J., et al.	1978	special=regular	.545	0.00	teacher
Meyers, C. E., et al.	1975	special=regular	.360	.10	teacher
Rucker, C. N., et al.	1970	special>regular	.025	.77	teacher
Schell, J. S.	1959	special=regular	.500**	0.00*	teacher
Thurstone, T. G.	1959	special>regular	.025	.35	teacher
Bacher, J. H.	1965	special>regular	.025	.53*	peer
Goodman, H., et al.	1972	special>regular	.005	1.15	peer
Gottlieb, J., & Budoff, M.	1973	special>regular	.025	.45	peer
Gottlieb, J., & Davis, J.	1973	special=regular	.500**	0.00*	peer
Lapp, E. R.	1957	special>regular	.025	.66	peer
Spann, J. M.	1977	special=regular	.500**	p.00*	peer
Thurstone, T. G.	1959	special>regular	.025	.61*	peer
Coy, M. N.	1977	regular>special	.005	.86	other adult
Gampel, D. H., et al.	1974	regular>special	.025	.44	other adult
Goldstein, H., et al.	1965	special>regular	.025*	.71*	other adult
Gottlieb, J., et al.	1975	regular>special	.005	1.95	other adult
Smith. H. W., et al.	1967	special=regular	.500**	0.00*	other adult

**Indicates assumed probability for reported null effects that did not provide p-levels.

*Indicates that effect size or p-level was estimated from tabular or other information provided in the article.

+All p-levels reported as one tailed.

Table 3

Comparison of Special Versus Resource Class Placement

Author(s)	Year	Outcome	p-level[+]	Effect Size	Measure
Burke, D. A.	1979	special=resource	.500**	0.00*	self
Carrol, A. W.	1967	resource>special	.025	.71	self
Kehle, T. J., et al.	1978	special=resource	.500**	0.00*	self
Kendall, W. S.	1977	resource=special	.500**	0.00*	self
Lewis, M. E.	1974	special>resource	.025	.66	self
Strang, L., et al.	1978	resource>special	.012	.77	self
Tilley, B. K.	1971	special=resource	.500**	0.00*	self
Walker, V. S.	1974	special=resource	.500**	0.00*	self
Kehle, T. J., et al.	1978	special>resource	.025	.34*	teacher
Tilley, B. K.	1971	special=resource	.500**	0.00*	teacher
Sheare, J. B.	1974	resource>special	.025	.34	peer
Smith, H. W., et al.	1968	special=resource	.500**	0.00*	other adult

**Indicates assumed probability for reported null effects that did not provide p-levels.

*Indicates that effect size or p-level was estimated from tabular or other information provided in the article.

[+]All p-levels reported as one tailed.

Table 4

Effect Size Information for Measures of Social Adjustment

Type of Comparison	Average d-index[1]	Associated U_3	n
Special vs. Regular/Resource			
Self	-.08	53.2	27
Teacher	.23	59.1	13
Peer	.38	64.8	8
Other Adult	-.42	66.2	6
Special vs. Regular			
Self	-.07	52.8	19
Teacher	.24	59.5	11
Peer	.49	68.8	7
Other Adult	-.51	69.5	5
Special vs. Resource			
Self	-.10	54.0	8
Teacher	.17	56.7	2
Peer	-.34	63.3	1
Other Adult	.00	50.0	1

[1]Negative values mean regular or resource class placement was superior. Positive values mean special class placement was superior.